INFECTION CONTROL IN THE O.R.

SSG CATES

blouse

See-through blouse.

POPP
D

POPPD

Two peas in a pod.

O er t o

Operation

Painless operation.

TERMINAL LEARNING OBJECTIVE

Condition: Given the appropriate information

Action: Apply the proper infection control procedures to limit or reduce the risk of infection

Standard: IAW cited references.

Infection Control and Microbiology Terminology

Condition: given a list of terms and definitions

Action: Match the correct definition with each term

Standard: IAW Berry and Kohn's and Tabers.

Infection Control and Microbiology Terminology Continued

- Microorganisms-Living organisms that are invisible to the naked eye. This includes bacteria, fungi, viruses, yeast and molds.

- Spores-Inactive but viable state of microorganisms in the environment. Is highly resistant to heat, toxic chemicals, and other methods of destruction.

Infection Control and Microbiology Terminology Continued

- Aerobic-A microorganism that requires air or the presence of oxygen to live.
- Anaerobic-A microorganism that thrives and lives in an oxygen free environment.

Infection Control and Microbiology Terminology Continued

- Host-An organism from which a parasite obtains its nutrition.
- Carrier-A person who is apparently healthy that harbors and can transmit a pathogenic microorganism.
- Septicemia-The presence of pathogenic bacteria in the blood.

Infection Control and Microbiology Terminology Continued

- Community acquired infection- An infection that was present prior to hospitalization.
- Nosocomial Infection-Infections that are acquired by patients during hospitalization.

Sources of Contamination in the OR

Condition: Given the appropriate information

Action: Select the sources of contamination in the OR

Standard: IAW Berry and Kohn's.

Sources of Contamination in the OR Continued

- People-Surgical team members, patients, and visitor, etc.
- The major source of microorganisms in the environment.
- Contain microorganisms on/in their:
  - Skin.

Sources of Contamination in the OR Continued

- Hair-The number of microbes present/shed form the hair is directly related to cleanliness and length.

- Respiratory tracts.

May also cause contamination through human error/carelessness/breaks in aseptic technique.

CAUTION !

Errors <u>MUST</u> be readily admitted and corrected, lives could be at stake.

SOURCES OF CONTAMINATION

- A i r.
  - Transport medium for microorganisms.
  - Thousands of sub micron size particles are present in each cubic foot of air in the O.R.
- Inanimate objects, including:
  - Environmental surfaces-floors, walls, tables, etc.
  - Supplies and equipment.

CAUTION

Major areas of microbial population on all people are the head, neck, axilla, hands, groin, legs and feet.

FACTORS AFFECTING INFECTION RATES

Condition: Given the appropriate information

Action: Select the factors that affect infection rates in surgical patients in the O.R.

Standard: IAW Berry and Kohn's

FACTORS AFFECTING INFECTION RATES

- Age - The very young and very old.
- Obesity - Fatty tissue susceptible.
- Nutritional status - Malnourishment.
- Chronic disease - Reduces the body ability to fight.

FACTORS AFFECTING INFECTION RATES

- Duration of preoperative hospitalization short stays-low infection, longer stays higher risk for infection.

- Type of operation - Procedures entering the genitourinary or gastrointestinal tract.

FACTORS AFFECTING INFECTION RATES

- Duration of procedure - The longer the procedure, the greater risk of infection.

- Operative technique - Wounds heal faster if tissue handled gently.

MECHANISMS OF THE HUMAN BODY

Condition: Given the appropriate information

Action: Select the mechanisms of the human body that protect against infection

Standard: IAW Berry and Kohns

MECHANISMS OF THE HUMAN BODY

- Skin - Body's greatest mechanism.
  - Thick physical barrier.
  - Secretes substances.
- Mucous membranes.
  - Increased blood supply.
  - Some flora serve to protect.

flo·ra

n. pl. **flo·ras** or **flo·rae**

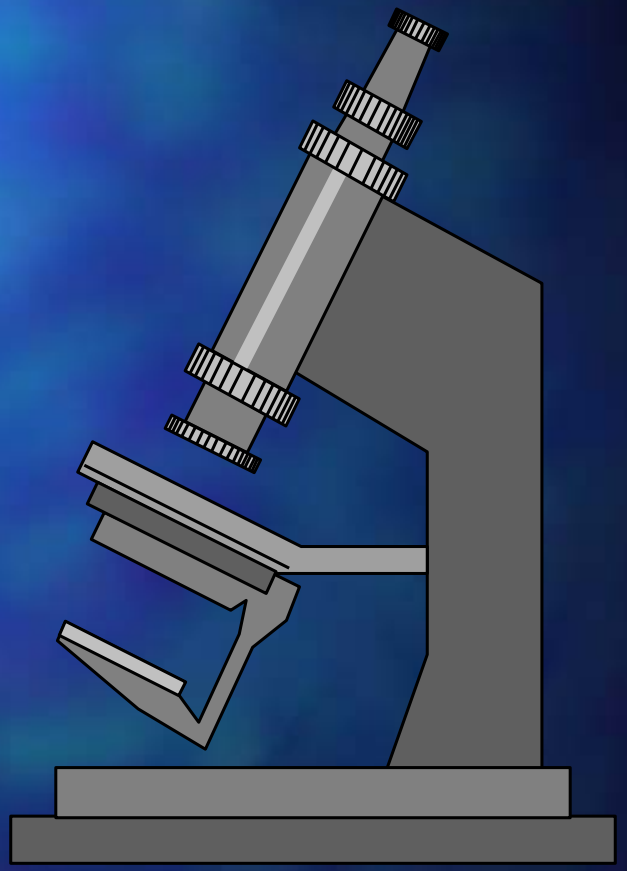
1. The bacteria and other microorganisms that normally inhabit a bodily organ or part: *intestinal flora*

MECHANISMS OF THE HUMAN BODY

- Tears.
  - Wash away debris and microorganisms.
  - Natural anti-bacterial agent.

MECHANISMS OF THE BODY

- Immune System.
  - Antibodies.
  - White blood cells.



PRACTICES TO CONTROL INFECTION

Condition: Given the appropriate information

Action: Identify the practices that control infection in the O.R.

Standard: IAW Berry and Kohn's

PRACTICES TO CONTROL INFECTION

- Hand washing - critical step.
- Good personal hygiene.
  - Skin
  - Hair
- Fingernails.
  - Clean and short
  - Nail polish

PRACTICES TO CONTROL INFECTION

- Proper wear of attire.
  - O.R. cap
  - Scrub suit
  - All non-scrubbed personal
  - Shoe covers

PRACTICES TO CONTROL INFECTION

- Face mask.
  - Sterile supplies
  - Changed between cases
    - Talking
    - Sneezing
  - Remove ties only

CAUTION

- Discard face mask into designated container. Wash hands, dry thoroughly after removal.

PRACTICES TO CONTROL INFECTION

- Use universal and standard precautions.
- Environmental control.
  - Climate control (68 to 75 F)
  - Control of humidity
  - Positive air pressure

PRACTICES TO CONTROL INFECTION

- Air exchange
- Housekeeping practices
- Traffic patterns
- Sterilization

- OR construction.
  - O.R. designed
  - Constructed using non-porous materials

Biological Warfare Agents

- Biological Warfare Agents- infectious diseases or toxins.
- BW Dissemination- is the process by which infectious diseases or toxins are dispersed to cause disease or

Biological Warfare Agents

- Bacteria- are small free-living organisms
- Viruses- are organisms that require living cells in which to replicate.
- Rickettsiae- are microorganisms that have characteristics common to both bacteria

Biological Warfare Agents

- Chlamydia - are obligatory intracellular parasites incapable of generating their own energy source.
- Fungi - are primitive plants that do not utilize photosynthesis, are capable of anaerobic growth, and draw nutrition from decaying vegetable matter.

Biological Warfare Agents

- Toxins- are poisons produced by organisms.

Classification of Biological

- Taxonomic classification of biological agents is important in terms of detection, identification, prophylaxis, and treatment. Biological agents which may be used as weapons can be classified as follows:

Classification of Biological

- Bacteria - Bacteria are small free-living organisms, most of which may be grown on solid or liquid culture media. The organisms have a structure consisting of nuclear material, cytoplasm, and a cell membrane. They reproduce by simple division. The diseases they produce often respond to specific therapy with antibiotics.

Classification of Biological

- Viruses - Viruses are organisms that require living cells in which to replicate. Therefore, they are intimately dependent upon the cells of the host that they infect. Their stability in the environment is very variable. They produce diseases which generally do not respond to antibiotics, but which may be responsive to antiviral compounds. However, supportive care (e.g. fluids, anti-inflammatories, and rest) is often the only treatment for viral

Classification of Biological

- Rickettsiae - Rickettsiae are microorganisms that have characteristics common to both bacteria and viruses. Like bacteria, they possess metabolic enzymes and cell membranes, utilize oxygen, and are susceptible to broad-spectrum antibiotics. They resemble viruses in that they grow only within living cells.

Classification of Biological

- Chlamydia - Chlamydia are obligatory intracellular parasites incapable of generating their own energy source. Like bacteria, they are responsive to broad-spectrum antibiotics. Like viruses, they require living cells for

Classification of Biological

- Fungi - Fungi are primitive plants that do not utilize photosynthesis, are capable of anaerobic growth, and draw nutrition from decaying vegetable matter. Most fungi form spores. Free-living forms are found in soil. The spore forms of fungi are operationally significant. Fungal diseases may respond to various antimicrobial drugs.

Classification of Biological

- Toxins. Toxins are poisons produced by organisms. The poisons, not the microorganisms that produce the poisons, are harmful to man. Toxins do not grow or reproduce. They are more easily controlled than live organisms (i.e. decontamination is easier). Field monitors capable of providing prompt warning of a toxin attack are not available. Therefore, soldiers must learn to quickly recognize

Dissemination Techniques

The same routes of entry pertinent to natural
spread of diseases (inhalation, ingestion,

Dissemination Techniques

- Aerosol - Delivery by aerosol is considered to be the most important route of attack. Infectious disease organisms are subject to decay over time, which will vary with environmental factors and the nature of the organism. Thus, atmospheric conditions are critical to the effective use of biological agents distributed by aerosol exposure.

Dissemination Techniques

- Inhalation of agents (respiratory exposure) - results in deposition of infectious or toxic particles within the lungs which may provide a further direct pathway to the systemic circulatory system depending on the size of the droplet

Dissemination Techniques

- Dermal Exposure (Percutaneous) - Intact skin provides an excellent barrier for most, but not all, biological agents.

However, mucous membranes and damaged skin constitute breaches in this normal barrier through which agents may readily pass.

Dissemination Techniques

- Agents passing through the skin may cause skin lesions, or more rarely, can enter the systemic circulation to cause more generalized disease anywhere in the body. Generally, disease symptoms from skin exposure take longer to occur than those from aerosol exposure (3 to 10 days versus 1 to 3 days).

Dissemination Techniques

- Alimentary Exposure (Ingestion)
  Direct contamination of consumables, such as drinking water, foodstuffs, or medications, could be used as a means to disseminate infectious agents or toxins.

Dissemination Techniques

- This method of attack would be most suitable for sabotage activities and might be used against limited targets such as water supplies or food supplies of a military unit or base.

Dissemination Techniques

- Vector-Borne Attacks - Large number of infected live vectors can be produced to spread vector-borne diseases by releasing infected arthropod hosts such as mosquitoes, ticks or fleas.

Dissemination Techniques

- Agent Survival - There is potential for delayed generation of secondary aerosols from previously contaminated surfaces. To a lesser extent, particles may adhere to individuals (skin or clothing) creating additional, but less significant, exposure hazards.

Dissemination Techniques

- Person-to-person spread - Humans, as unaware and highly effective carriers of a communicable agent, could readily become a source of dissemination of certain agents by direct contact (skin or clothing) or aerosol droplet spread (e.g. sneezing or coughing).

Questions ?